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A row of Rogue squat racks is displayed in a large industrial warehouse. The racks are arranged in a line, receding into the background. They come in various colors: white, red, orange, blue, and green. The warehouse has a high ceiling with exposed steel beams and large windows. The floor is polished concrete, reflecting the racks and the overhead lights.

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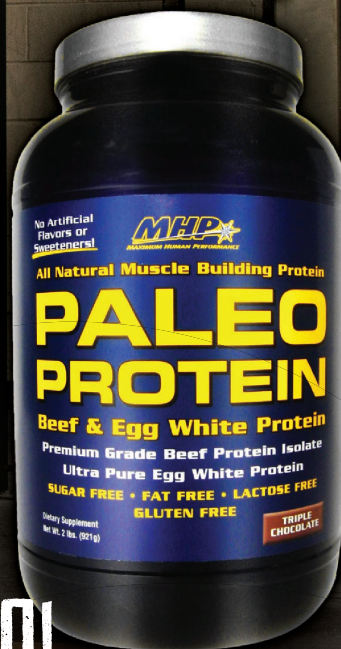
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# CrossTalk

JULY/AUGUST 2015

BY JOE WUEBBEN





*“Remember this: Your body is  
your slave; it works for you.”*

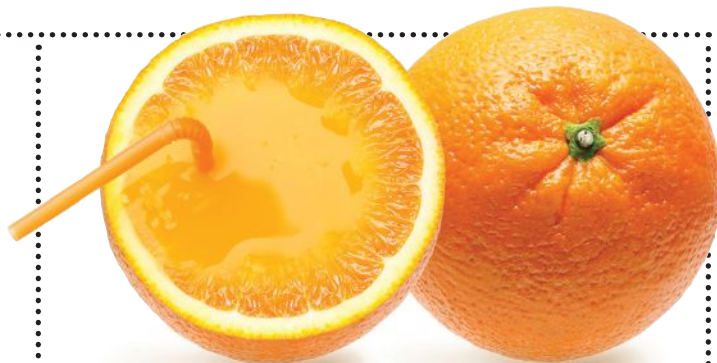
*— Jack LaLanne*





## FRESHLY SQUEEZED FINDINGS

>> Good news for orange juice lovers: You can drink your favorite citrus beverage guilt-free. Popular nutritional wisdom advises choosing whole fruits over juices because the latter (lacking the fiber of the fruit) are significantly higher in sugar. But recent research published in the *Journal of Agricultural and Food Chemistry* says there may be a significant health benefit to drinking OJ rather than eating an orange. While it was found that pasteurized orange juice contains lower levels of carotenoids, flavonoids and vitamin C — which collectively help prevent numerous ailments, from cancer to cardiovascular disease — than the fruit itself, the researchers also discovered that these nutrients were more bioaccessible (better absorbed and used by the body) in OJ versus whole oranges. Not that we recommend you guzzle a half-gallon of Minute Maid with your breakfast, but feel free to accompany your bacon and eggs with a glass of it.



## COMPARING ORANGES TO ORANGES

	ORANGE JUICE*	WHOLE ORANGE
Serving Size	8 ounces	1 large orange (184 grams)
CALORIES	110	86
FAT	0 grams	0 grams
CARBS	26 grams	22 grams
SUGAR	22 grams	17 grams
PROTEIN	2 grams	2 grams
FIBER	0 grams	4 grams
VITAMIN C**	120 percent	163 percent

\*Tropicana Pure Premium

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### 5-MINUTE FIX:

## BURPEES

>> You can make burpees sound pretty simple if you want: Start in a standing position, touch your chest to the floor and finish with a vertical jump. Repeat. But to make them less painful, you need to make them more efficient. Darcy Giaquinto, owner of CrossFit GroundSpeed in Rincon, Georgia, will help you do just that with the following pointers:

#### MIND YOUR POINTS OF CONTACT.

"Begin the movement with your feet set a comfortable squat-stance-distance apart," Giaquinto says. "As you lower your hands to the ground, place them slightly narrower and a bit in front of your feet to prevent too deep of a squat, which isn't necessary and becomes wasted energy. As you

jump your feet back to the plank position, the wider your feet are set as a base, the less your core must work to maintain your balance. When returning the feet back to the squat position, landing with a wide base and flat-footed is critical. The wider base means less height you must achieve to prepare for the vertical jump. If you're landing on your toes as opposed to flat-footed, you're not only placing unnecessary stress on the knees, but you're also forcing the quads to work harder and fatigue quicker."

#### KEEP YOUR BURPEES FLUID, NOT CHOPPY.


In theory, the burpee can be broken into several different movements. According to Giaquinto, however, this is exactly what you don't want to do in practice. "In order to be more efficient and build stamina, avoid slow eccentric movements," she says. "Rather than doing a strict push-up, think about dropping yourself to the floor at the same time you're jumping your feet back. The same rule applies to the return from the floor. If you wait until

you're fully extended to the top position of a push-up before bringing the feet in, you're challenging the muscles more than needed, consequently risking quicker fatigue."

**GET INTO A GROOVE.** No exercise taxes your muscles head to toe in such grueling fashion as the burpee. "A good way to combat this fatigue," Giaquinto says, "is by establishing a steady rhythm and maintaining consistent speed. This should be a pace that you can maintain with rhythmic movements and breathing, which in turn allows more oxygen to be delivered to the muscles and prolongs muscular endurance. Establishing this rhythm, especially when doing large numbers of burpees at one time, will also keep your mind focused on an intentional pace rather than the inevitable fatigue."







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## EAT THIS

### TENDER ASIAN-MARINATED FLANK STEAK

>> Flank steak is a really special piece of meat, and when prepared well, it's melt-in-your-mouth tender. Serve it on top of a tossed green salad with some avocado for a nourishing, complete meal.

*The recipe was excerpted from The Performance Paleo Cookbook by Stephanie Gaudreau (Page Street Publishing, January 2015).*

#### INGREDIENTS

- 1 pound (454 grams) flank steak
- 2 garlic cloves, peeled and smashed
- 1-inch (2.5-centimeter) piece ginger, peeled and sliced into thin coins
- 3 green onions (2 ounces [57 grams]), white and light green parts, roughly chopped
- ¼ cup (59 milliliters) coconut aminos
- 2 tablespoons (30 milliliters) lime juice
- 2 teaspoons (10 milliliters) dark sesame oil
- 1 teaspoon fish sauce
- 1 tablespoon (15 milliliters) coconut oil

#### DIRECTIONS

1. Combine all the ingredients except for the coconut oil in a plastic zip-top bag or a medium bowl. Cover and refrigerate for at least 2 hours. Longer is definitely better, up to 24 hours. Remove the meat and pat it dry. Discard the marinade.
2. Heat a skillet to medium-high heat and add the coconut oil. When it shimmers, add the steak and sear for 3 minutes until a golden brown crust has formed. Flip the steak and sear the other side for 3 minutes. Then turn the heat down to medium-low and cook until it's to your preference, about 4 more minutes for medium.
3. Let rest on a cutting board for at least 5 minutes before slicing. Cut into thin strips, against the grain (muscle fibers). It'll be really tender that way. Serves 2.



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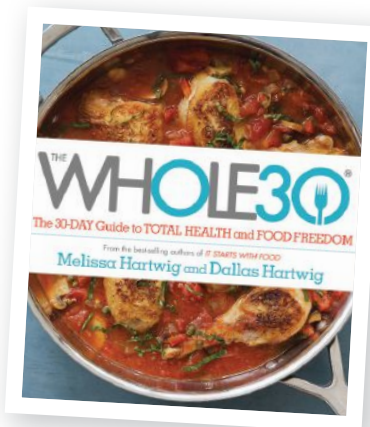
>> Over the last five years, Dallas and Melissa Hartwig, founders of Whole9 and authors of *The New York Times* best-selling book *It Starts With Food*, have revolutionized the way people think about what they eat. In their new book, *The Whole30: The 30-Day Guide to Total Health and Food Freedom* (Houghton Mifflin Harcourt, 2015), they provide an all-encompassing road map to their 30-day reset program. The Hartwigs recently shed light on the evolution of their new book, including some of their most important recommendations for both Whole30 virgins and veterans alike.

### *What motivated you to create your new book?*

Our readers asked for a comprehensive guide to the program all in one place — no Internet connection required. We put all our Whole30 know-how in this book, giving those new to the Whole30 enough background, science and practical application (including education on cooking) to help them commit to, prepare for and complete the program successfully. And for our loyal Whole30 veterans, we crafted a lot of brand-new material — things we've mentioned briefly in social media, forums or seminars but which were never compiled into one resource. We've provided troubleshooting tips, cooking techniques, habit-forming strategies and more than 100 compliant recipes.

*If you had to summarize your philosophy on total health, what are the three most important recommendations you would make for someone brand new to Whole30?*

1. Start with the Whole30 to identify foods that make you healthier or less healthy, create new healthy habits and recognize areas where you may need to change your emotional relationship with food. Use the program to create a diet that's sustainable and balanced and still includes the foods you've determined are worth it for you.



*Melissa and Dallas Hartwig*

2. Take what you've learned out into the real world and keep re-defining your idea of healthy. Pay attention when you eat off-plan foods, always. Constantly re-evaluate what's worth it and what's not. Support friends and family who decide to take steps toward better health. Come back to the Whole30 if you need a reset.

3. Remember that it starts with food, but food isn't the only factor in creating a healthy, happy life. Take the momentum from your Whole30 experience and keep improving by expanding your idea of what's healthy for you in other areas of your life, like movement, sleep, socialization or stress management.

This advice applies whether you're new to the Whole30 or a veteran of the program. When things start heading in the wrong health direction, remember how important the basics are and how crucial it is to evaluate the bigger lifestyle picture to get back on track.

The Whole30: The 30-Day Guide to Total Health and Food Freedom is available now. Find more info at [whole30.com/whole30book](http://whole30.com/whole30book).

— Elke S. Nelson, Ph.D., CFL-1

## FIT LIST

### CIVIC PRIDE, OR LACK THEREOF

>> You may live in a cool, hip city with a thriving social scene and nightlife, but is your urban utopia a healthy one? BetterDoctor.com unveiled its Healthy Cities Index earlier this year, ranking major metropolitan areas based on data in such categories as area disease rates and activity levels; number of highly rated, in-state doctors; and percentage of residents with health insurance coverage. Fifty cities in all were ranked in order. Here are the top and bottom 10:

#### 10 HEALTHIEST U.S. CITIES

- 1 Boston, Massachusetts
- 2 Minneapolis, Minnesota
- 3 Washington, D.C.
- 4 San Francisco, California
- 5 Hartford, Connecticut
- 6 Pittsburgh, Pennsylvania
- 7 San Jose, California
- 8 Salt Lake City, Utah
- 9 Seattle, Washington
- 10 Cincinnati, Ohio

#### 10 UNHEALTHIEST U.S. CITIES

- 1 Memphis, Tennessee
- 2 Oklahoma City, Oklahoma
- 3 Louisville, Kentucky
- 4 San Antonio, Texas
- 5 Nashville, Tennessee
- 6 Indianapolis, Indiana
- 7 Las Vegas, Nevada
- 8 New Orleans, Louisiana
- 9 Los Angeles, California
- 10 Jacksonville, Florida

For complete rankings and further explanation of the metrics used, visit [betterdoctor.com/health/healthiest-cities](http://betterdoctor.com/health/healthiest-cities).





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# PAIN RELIEF

Quick remedies for common CrossFit injuries with Brian Strump, DC

**Q:** Do weight belts really help prevent lower-back injuries? Or am I better off not wearing a belt?

**A:** This is a question I wish was asked more often. Usually when I ask someone why he or she is wearing a belt, I get some vague answer like, 'To help my back.' First, there is no magic belt that helps your back. I like to think of a weight belt as a feedback mechanism that lets you know you're bracing properly before a lift.

While there's some argument over what muscles make up the core, the major components are the transverse abdominals, psoas, internal obliques, multifidus, diaphragm and the pelvic floor. Those muscles need to work together to create a rigidity (stiffness) in the lumbar spine during lifting. Before the lift, upon inhalation and filling your belly with air, you should feel the

pressure of your stomach and sides increasing against the belt. That's the feedback you want throughout the duration of the lift. On the other hand, if you breathe in and up (think sucking in your belly and raising your shoulders), you won't feel that increase in pressure, in which case you'll know you're not bracing properly.

Similar to a belt you'd wear to keep your pants up, there's a right and wrong way to employ a weight belt. The belt should be snug but not uncomfortably tight. And you don't want to rely on it all the time. Ideally, you should train

yourself to brace effectively without the belt for submaximal lifts — those below 80 percent of one-rep max. For lifts greater than that, the belt can be more beneficial. □

Brian Strump, DC, is the owner of CrossFit Steele Creek ([crossfitsteelecreek.com](http://crossfitsteelecreek.com)) and Premier Health & Rehab Solutions in Charlotte, North Carolina.



Photo by Robert Reiff

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*- Kelly Beth Clawson, Fairfax, VA*

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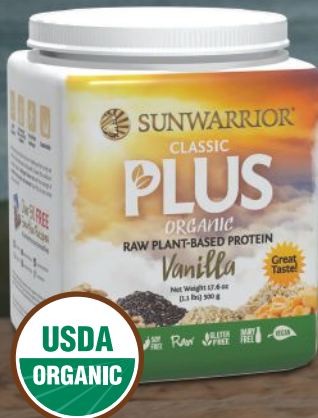
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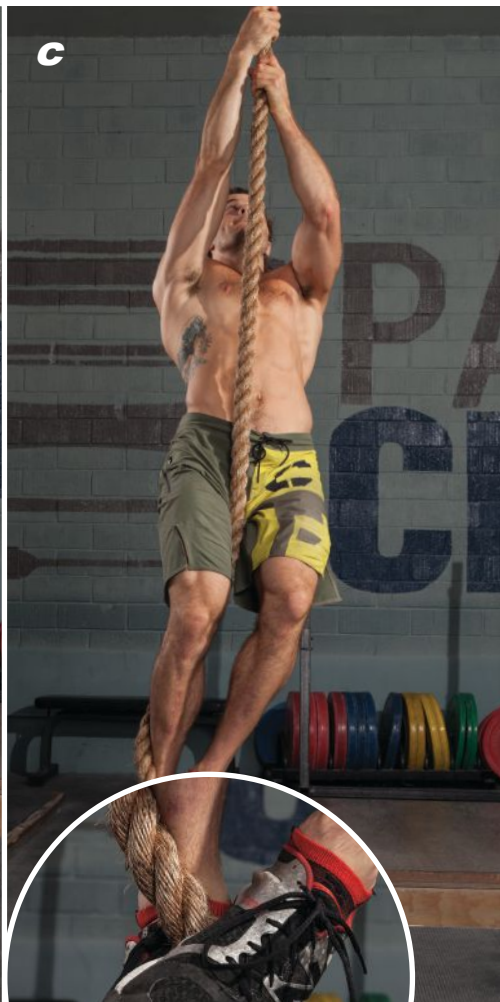
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# THE ROPE CLIMB

*CrossFit athletes love to discuss the importance of technique and how it's the great equalizer. The sad truth, however, is that technique can't compensate for a lack of strength, but pure strength can often cover for poor technique. This is true for almost every exercise in CrossFit except the rope climb. Cleaning up your rope-climbing skills can put you on nearly even ground with the strongest of athletes. With the right instruction, a new CrossFitter at even the most base strength level can make his or her first successful climb, while an experienced athlete can improve his or her efficiency to such a degree that consecutive trips up the rope become no problem.*

By Mike Carlson, NASM-CPT, CFL-1 • Photos by Cory Sorensen



A faster way to clamp your feet on the rope is known as the Russian wrap. Begin by grabbing the rope as high as possible. With the rope between your legs, bring your left knee up the rope and then push the rope to that side with the outside of the foot. Swing your right foot under the first foot and scoop up the rope. The rope should run along the bottom of the left foot and over the top of the right foot. Lock down on the rope by keeping your feet close together. They won't be stacked so much as next to each other.



## 1

### THE SETUP

There are two ways to approach the rope climb, and they mostly differ by how you wrap your feet. The Spanish wrap is slightly more complicated and a bit slower but provides the most stability and safety. It's a good technique for beginners and those who don't possess much upper-body strength. Begin by grabbing the rope as high as possible (a). With the rope between your legs, pick your dominant knee up high and cross that foot over the front of the rope and around, kicking the foot straight out so the rope wraps around the calf and flows over the top of the foot (b). Keep your hips jutting away from your body at this point. Next, stack your free foot on top of the other foot, clamping the rope tightly between your feet (c). You should be securely fixed to the rope and able to stay aloft without much effort from your arms.



Athlete: Matthew Walrath  
Location: Paradiso CrossFit, Marina del Rey, California



## 2 THE CLIMB

Bring your hips to the rope and reach high with your hands, then tuck your feet underneath you and as close to your butt as possible (d). Shimmy your feet so the slack in the rope slides down. Kick out the dominant leg

one more time and move your hips back to allow the rope to flow over your foot (e). Step down hard and secure the rope (f). Bring your hips to the rope, reach high and repeat.



When performing the Russian wrap, bring your knees up high with your feet under your butt. Maintaining hard flexion in the feet will make it easier to keep the rope in place. Find the lock, clamp down again with your feet, and then stand up and reach higher on the rope.

## 3 THE DESCENT

For either type of wrap, the descent is the same. Clamp hard with your feet and then come into a squat by sitting your butt onto your heels (g). Bring your hands down the rope, extend your legs, securely re-wrap your feet and repeat. □





## IN THE CROSSHAIRS: PISTOLS

Here's the broader scientific context behind this often frustrating movement.

By Bob LeFavi, Ph.D., CSCS, USAW, CFL-1

**T**he one-legged squat, also known as the “pistol,” trains and tests the strength of the lower extremity. At the same time, this high-level CrossFit movement challenges an athlete’s core support, stability and mobility. And yet, it can be an entirely frustrating movement, simple for some and nearly impossible for others. It’s not uncommon to see athletes squat twice their bodyweight with ease and then completely fail when attempting a pistol. Others try to take a challenging movement to an even more challenging level, performing pistols on top of very unstable surfaces like a kettlebell handle. Um, don’t do that.

But do keep the pistol in your toolbox. Its beauty lies in the fact that it requires no equipment, can be done anywhere and translates to proficient performance in other movements.

### PHYSIOLOGY FIRST

Some athletes assume that because the line of force shifts from directly through the center of the body (midline) on a two-legged squat to directly over one leg on a one-legged squat, the muscles activated also change. But no, a pistol activates the same muscles as a regular squat — the quadriceps (knee extension), hamstrings (hip extension), gastrocnemius (knee extension), soleus (plantarflexion),

glutes and erector spinae (hip extension).

The difference is in the other muscles that are engaged. Pistols also call on muscles involved in balance: obliques, abdominals and even the muscles stabilizing the ankle and in the foot. In addition, the hip flexors are isometrically engaged by the opposite leg when an athlete holds one leg up parallel to the ground while doing the pistol. Those with poor mobility or who are just learning how to do pistols may find that the rectus femoris and/or iliopsoas begin to cramp during this isometric hold. With training, the hip flexors are able to adapt well to the movement and the cramping should subside.

### AIMING FOR PISTOLS

Here are the strongest reasons for including pistols in your training.

#### *Increased Strength*

There are two beneficial factors involved in unilateral training for the legs. First, two-legged squats can predispose one to strength imbalances in the lower extremities. This occurs because one leg (the stronger, “dominant” one) tends to lead. Pistols, on the other hand, can help correct strength imbalances as each leg is developed and strengthened separately and equally.

Second, in the phenomenon known as “bilateral deficit,” force that is developed by an athlete bilaterally (i.e., two legs on a knee-extension exercise) is less than the sum of the force from each individual leg working independently. This is a neurological response in which nerve energy is more efficient if not divided up into the two extremities. Therefore, each leg can exert more force separately, making unilateral training excellent at enabling maximal force production and development.

#### *Greater Stability*

The reason pistols train and enhance balance, coordination and stability has to do with the “base of support.” In a traditional two-legged squat, the base of support is essentially a box drawn around the area of both feet. In the pistol, the base of support is the athlete’s single foot on the floor. This is why the movement should only be trained after an athlete has demonstrated stability, balance and coordination in other movements.

#### *Translation to Sport*

Pistols have real-world sport applications because they prepare the athlete for high-intensity performance in locomotion (running, sprinting, etc.), jumping and sudden changes in direction. Further, one-legged squats enhance movement mechanics in other CrossFit exercises, including walking lunges and step-ups, and can help stabilize the front foot in a split jerk.

#### *Stronger Knees*

Pistols are great for developing the supporting muscles around the knee, particularly the vastus medialis. Strengthening the quads tightens the knee joint in general and reduces any “play” in the knee. A tight knee joint is less likely to be injured with moderate impact or medial/lateral stress. □



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## SNACK ATTACK

In the dark about where (or whether) snacking fits into your lifestyle? Here's what you need to know to keep your diet clean and your performance top-notch.

By Elke S. Nelson, Ph.D., CFL-1

**Q:** I am a 27-year-old male who CrossFits four times a week and is completely clueless about what role, if any, snacking should play in my diet. The lines seem blurred as to what a snack even is these days. I have bounced back and forth between recommendations, having either two or three large meals or six smaller meals in a given day. I want to get stronger and fitter, but more important, I want to continue eating the clean, nutrient-dense foods that support optimal health.

**A:** First, it's important to understand that it's not the type of food or the timing that qualifies a food as a snack; it's the purpose and portion size. We're not talking about those 100-calorie "snack packs" that are filled mostly with air and offer more sugar than they do nutrients. Those don't really have a place in a clean diet. But smaller versions of your typical whole-food meals might. When it comes to what types, when to eat them and how many snacks are best for you, consider the following:

### What does a typical day of meals look like?

If you find that making time for regular meals is just not feasible, you might be better off taking a "fewer, bigger meals with snacks" approach. One way to do that while keeping your total calories reasonable and making sure you're not compromising nutrient intake is to try intermittent fasting. This typically looks like a cycle of fasting for 16 hours (after dinner, through the night and then into the next morning), followed by an eight-hour feeding window during which you do all your eating for the day. Using a formal diet plan like intermittent fasting can take the emphasis off how many meals you're eating and help you focus more on total nutrient intake over the whole day.

### Is it preworkout or postworkout?

Whether or not you call it a "snack," it's important to have some food around workouts so that your body has ample energy and nutrients to draw on while in the box and to refuel for recovery afterward. Before workouts, foods that contain fat and protein are a solid choice because they keep insulin levels steady and allow the body to tap into fat stores to burn for fuel. After workouts, when stimulating insulin can help feed muscles, a snack that is still high in protein but also includes carbohydrates is favorable. In other words, a hard-boiled egg or palm-size chicken breast with a couple of tablespoons of guacamole is a stellar option to eat an hour before going to the gym. In the postworkout window, a quality protein shake and a banana or sweet potato are more suited. Branched-chain amino acids also can be part of a beneficial and strategic snack before, during or after a workout. If you're looking for ways to improve recovery, try supplementing with high-quality hypoallergenic BCAAs and a small amount of carbohydrates after hard workouts; they can be used in place of or in addition to protein powder. BCAAs also can be used before or during intense workouts when you have a near-empty stomach.

### Is it a rest day, how sore are you and do you plan to work out tomorrow?

Not surprisingly, snacking on rest days might look different than on intense workout days. When muscles are sore and broken down, it's important to swap high-carbohydrate foods for high-protein anti-inflammatory foods, especially if you're looking to get back to the gym tomorrow. In other words (assuming you fueled properly after your workout yesterday), stick to vegetables, meat and seafood as much as possible today. Don't forget to take your fish oil, fat-soluble vitamins and magnesium; your body will thank you. Meals should provide a nice amount of healthy fats, which will also make it easier to avoid the calls of that sweet tooth. If you find yourself craving snacks on rest days, consider nutrient-dense options like hard-boiled eggs, avocado, nuts and dark chocolate. □



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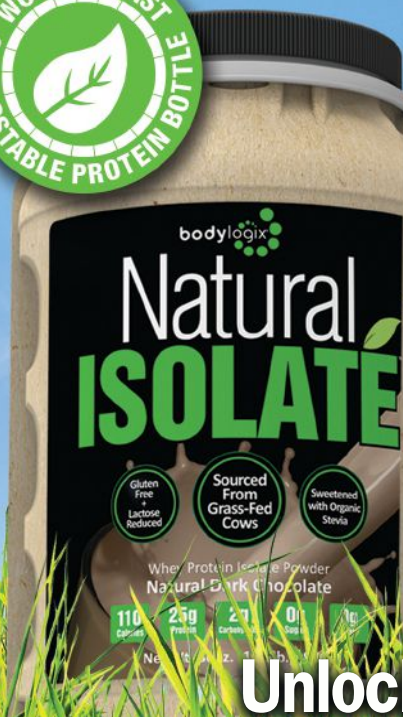
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## Unlock Your Natural Potential™





## CROSSFIT APOGEE

Owner and head coach Don Moss has a “come one, come all” attitude at his new Florida box.

By Joe Wuebben

**You welcome individuals of all fitness levels with open arms. What's the key to working with beginners?**

The first thing beginners have to battle is the intimidation factor of feeling like they have to be at some certain level when they start CrossFit. We specifically target beginners and make them realize that this is for anyone. We really drive home the fact that all you have to do is show up, and we will scale any workout to your current capacity.

**What are the most common variables you scale with beginners?**

Obviously, we don't want people using any weight that they can't move well. I'd rather someone be slow and good than fast and bad. The Olympic moves require a lot of coordination, and many people need a rewiring of the central nervous system to be able to change direction and velocity and calibrate for different weights. So instead of a power snatch from the ground, we'll do a hang snatch. We'll work them through the second pull over and over until they can get full hip extension and pull themselves under the bar. Load and Olympic movements are two of the main things we scale, among many other things, of course.

**How do you define your “intermediate” level of athlete?**

For us, intermediates can start to do things like pull-ups and air squats Rx'd, at least from a movement standpoint. Maybe they can't do muscle-ups yet or thrusters at 135 pounds, but if they can do the movements with a full range of motion and can do them consistently well, that's our intermediate.

**What about competitor level, then? Who falls into this group?**

Our competitor level is where you're doing things Rx'd and you have the skills down — maybe you're still working on

a couple of things, but now we can start to blend things together. Your Rx times are getting better and better, so instead of 135, we're going to do 155. And maybe the box jump becomes 30 inches instead of 24. We're trying to give you a leg up for when you go to a competition. But we're constantly keeping an eye on volume. I think that's where some competitors go wrong — they feel like they have to do two sessions a day, two hours each, and it really just breaks them down. They forget about the importance of recovery.

**So you have different levels of athletes, but you have them in the same classes, right?**

Yes, we don't have the hours in the day or the facility size to offer, say, a competitor class separate from a beginner or intermediate class. Our coaches know what level people are, and we offer different scaling options for the WODs on the board. And then we also have open gym hours during the day when competitors can come in and work on extra stuff.

**What are the biggest challenges in working with children?**

Well, the challenge when you're dealing with kids is the attention span is sometimes not there, so you've got to keep it fun and make it into a game. The benefits are that you can take a lot of CrossFit Kids cues for teaching movements and turn them right around to your adults. And also, it really drives home the point that anybody can do CrossFit. If a bunch of 5- and 6-year-old kids are running around doing CrossFit, I think it's something adults can manage, too. □

### BOX STATS

**LOCATION:** 7130 Big Bend Road, Gibsonton, FL 33534

**YEARS IN OPERATION:** 1

**NUMBER OF MEMBERS:** 130

**NUMBER OF COACHES:** 11

**FACILITY SIZE:** 5,000 square feet

**MEMBERSHIP FEES:** \$185 per month unlimited

**MORE INFORMATION:** CFApogee.com



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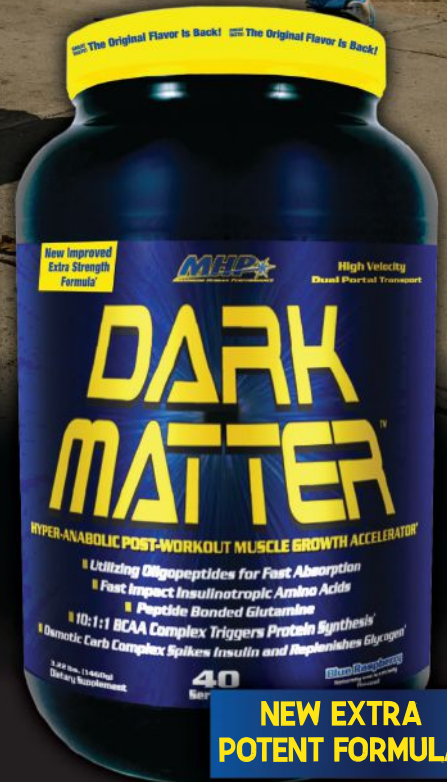
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# THE MAESTRO

DAVE CASTRO ISN'T JUST  
THE FACE OF CROSSFIT.  
HE'S DEEPLY INVOLVED  
IN HOW IT IS TAUGHT,  
LEARNED AND PRESENTED  
TO THE WORLD.

BY JORDANA BROWN | PHOTOGRAPHY BY ROBERT REIFF

Dave Castro is an artist, a master of kinetic expression. His media are iron and asphalt, AstroTurf, concrete and sand; muscle, sinew and sweat. His themes: exertion, dedication, challenge, victory and defeat. His masterpiece is the event he was instrumental in launching at his parents' ranch eight years ago this summer, an event that now sees hundreds of thousands of competitors engage in a series of workouts designed by the Gamesmaker himself.

"Programming at all the stages — Open, Regionals, Games — I view as art, performance art," Castro told us toward the end of a long conversation earlier this year. "But how it looks is not as important as how much of a test of fitness it is."

Despite all his public appearances, the occasionally argumentative YouTube clips, the seemingly renegade decisions that have left Castro with a (false) reputation for flippant arrogance, it always comes down to the training.

Of course, it started with the training, too. The details

of Castro's ascent to fitness fame are familiar: Now 37, the son of working-class Mexican parents grew up in Central California and earned a spot on the Navy SEALs shortly after graduating high school. While deployed in Afghanistan, he developed an interest in mountaineering and sought a training program that would assist his climbing. One thing led to another, and by 2006, Castro was back in California, training at CF HQ in Santa Cruz. From there, it was a surprisingly few leaps from helping CrossFit founder Greg Glassman out at Level-1 seminars to holding the reins of the global phenomenon.

As the face of the CrossFit Games and director of CrossFit's Training Department, Castro's influence goes deep. It's his decisions that determine what movements are taught and how; his innovation that pushes athletes to be ever faster and stronger; his instincts that are legitimizing the sport of fitness. We sat with Castro to discuss the two hats he wears and how he juggles the intricacies of his job.



# OF MOVEMENT





## ON THE JOB

*There are two facets to your job: There's the massive event you plan every year, and there's the director-of-training part. How do those two pieces come together?*

I think 90 percent of the world knows me because of the Games and associates me with only the Games, and assumes my identity is the CrossFit Games. But the reality is that the majority of my work and the majority of my time is spent running the Training Department with Nicole Carroll. That's how I got involved with CrossFit — through the seminars. The Games are just a side event that I happened to take on. With the seminar department, in 2006, 2007, 2008 and a little bit of 2009, I was on the road teaching seminars and teaching CrossFit Level-1s, but eventually, we had to grow the department and grow the staff, so we started developing other staff underneath us and then my role transformed into managing those people. In 2007, we had 10 trainers. Now we have close to 200 trainers globally who we send around the world to train and do Level-1s. So I schedule staff and manage all the Level-1s. Any seminar that we do, I have my hands in.

*But you don't actually schedule the individual seminars, do you?*

No, I do. I do. Because there's an art to scheduling them that's really important. Like, for example, we can't have three or four San Jose seminars at once up on the calendar because it'll affect any one of them selling. So we'll have one San Jose seminar up, and as soon as that one sells out, we'll put another one up. That's happening in every part of the world, and I monitor that closely. Every day I'm checking the numbers for how the seminars are selling, I'm checking where we need to go, where we haven't been, exploring new places to go. In any given weekend, we're doing over 20 seminars, and that includes Level-1s, Level-2s and CrossFit Kids.

Right now, more of our seminars are overseas than they are here. We're going into China and exploring doing

seminars there. We're doing a ton of seminars in South America and just managing finding facilities and then managing staffing them and figuring out who's going to go to each seminar and who's going to teach — there're a ton of factors that go into that. And that's 365 days because there are only three weekends we take off: Games weekend, Christmas weekend and New Year's weekend. Every other weekend, we're doing seminars.

*Do you have to recruit seminar staff?*

We do recruit. And we have a system now, where they have to have a Level-1, obviously, and then they go through the Level-2 and then they're supposed to pass the Level-3 test. In the past, we've just recruited people like Rich [Froning]. But even though we still do that, they still have to go through the process and actually train and go through the process on scene. I've said to plenty of Games athletes, just because they're Games athletes and they're good-looking and personable, "Hey, you should try out for Level-1 team." That's the extent of what I can offer: You should try out. Because then once they try out, it's on them if they're good enough to be on the team. Even if it's Rich Froning or Julie Foucher, both of them proved that they were good enough to be on the team.

*Because there's more to it than just being an athlete.*

Yeah, you have to be a good trainer. You have to be able to teach CrossFit. So in the past year and a half, two years, we've been developing the Lev-

el-3 and the Level-4. Level-3 is already in place, and that's an online test.

*What's in store for the various certification courses?*

Level-1 is our basic introductory course where people learn about CrossFit. They learn about the methodology and how to do the basic movements. After that, if they pass a written test, they get a Level-1 trainer certificate. We don't mean for everyone to go run out and become trainers. But if they want to and if they're competent and capable, they then can go out and teach CrossFit at a CrossFit affiliate or they can become a CrossFit affiliate. That's what a Level-1 is, a basic introductory course. We don't say it's the end-all, we don't say this is all you need. For some people who have experience in training, it might be all they need if they want to train CrossFit. Others shouldn't be training people at all, and that's down to individual responsibility to determine.

We get a lot of feedback where people go to a Level-1 and they say, "The guy next to me couldn't even do a pull-up; he shouldn't be a CrossFit trainer." Well, guess what, the guy next to you isn't gonna be a CrossFit trainer, you know? And that's just a reality. Over 100,000 people have passed the Level-1 test, and we have 10,000 affiliates. So if you look at those numbers, that means 10 percent of everyone who's ever passed the Level-1 is even opening up an affiliate. And even if you assume every affiliate had, let's say on the high end, four trainers in addition to the affiliate owner, that means there's 50,000 trainers training CrossFit. That's still half of all the people

I THINK 90 PERCENT OF THE WORLD KNOWS ME BECAUSE OF THE GAMES AND ASSOCIATES ME WITH ONLY THE GAMES, AND ASSUMES MY IDENTITY IS THE CROSSFIT GAMES.





at the Level-1s who then are training. People miss that a lot.

The Level-2, then, is for people who have a Level-1 and who have been coaching for six months, and at the Level-2, they're now tasked with teaching the movements, and our trainers are giving them feedback and giving them coaching on their movements. And the Level-3 is an online 150-question test that's really difficult, and it's given at Pearson VUE centers. Level-3 is actually going to be our certification.

*What will it allow people to do?*

Well, it really is just a matter of bureaucracy. What I mean is if you get to Level-3, you've proven a high level of ability in your knowledge of CrossFit, but the reason we're using the word "certification" is because it conforms with industry norms. We get so much criticism at the National Strength and Conditioning Association about the CSCS certification. Just because you have a CSCS doesn't mean you're a better trainer than anyone with a CrossFit Level-1, but they have always said we don't have a certification. So now we're going to have a certification. Really, it just gives someone a sense of credibility.

And then the Level-4 will be what we used to do for the old Level-2, which is get in front of our best instructors and teach the movements to a group of unknown people, and they will grade you on those movements. And they'll pass or fail you. And so it's very subjective, but it's based off our experience and our call if you're a good instructor or not. That's down the road a little more; it's not ready yet.

## **AT PLAY**

*When do you start designing events for the Games?*

There definitely is not an offseason in the preparation and creation of the Games. My season of the Games is always going. We're always preparing, and I joke that it's not 365 days, it's at least 400, 500 days. I'm actually planning 2016, 2017, so there's planning for Games in a few years that's going on.



*Is it as detailed as what the events are going to be?*

All, everything. Everything. We're always thinking about ways to make the season better, if that means with programming, if that means with rules, if that means with divisions, if that means with the look of it, always thinking about how to do it better. And I'm always thinking about programming ideas. I have some big ideas for a couple of years down the road that aren't appropriate yet but will be in a couple of years.

*What makes the things that are appropriate for later not appropriate now?*

I can't say because it would give it away.

*When is the programming for the Games locked in?*

Regionals are unique since they have to be replicated, so there's a point, usually about a month and a half out, when they have to be done. We all fly to Columbus, Ohio, all the Regional directors, and we have a big meeting. That's where I brief them on all the workouts and it becomes set in stone.

The Games are way different. There have been multiple years when on Saturday, we don't know Sunday's events. At the 2008 Games, we knew we were going to do "Grace" on Sunday, but Sunday morning we decided 135 pounds was too light because the athletes were so much stronger than we realized. So we bumped the weight up to 155. At the 2009 Games, there were workouts that we had later on Saturday that were five rounds, but Saturday was such a big day and so intense that we said, "Hey, we need to make it three rounds." And those Games had been pretty much set.

At the 2010 Games, we didn't even have any of Sunday planned because of equipment. Bill [Henniger of Rogue Fitness] had brought in so much special equipment for Sunday, and I didn't want to create the workouts without seeing the equipment first. It's actually really hard to program around stuff you've never played with because you don't know how long it's going to take the athletes to do it, you don't know how it's going to affect them, so you

need to play with the stuff a little.

The 2014 Games, pretty much everything was set. There was some tweaking leading up, but by two or three days out, everything was set. We had placeholders and had concepts, but some of those concepts needed to be tested, and they couldn't be tested anywhere else but there. Like the sprint sled, for example. We had to test that, and once we did, we thought it was going to be faster and we thought the women would be able to finish, but then we had to make their distance 60 yards instead of 100 yards. So the special equipment that you see at the Games makes programming ... interesting.

*Do you take individual athletes' strengths and weaknesses into consideration when programming the Games? This is something we've wondered since watching Rich Froning struggle with that 3-mile run at the 2014 Games.*

Not knowing who's going to be competing but knowing what people are capable of and knowing what people can do. The Triple Three, that was a cool event and that's just a matter of testing endurance and distance running. They don't get to run at the Regionals, so I really wanted to have them run at the Games, and [Froning] got exposed by that. He recovered well, obviously, but yeah, that was a good test for him.

The Open is programmed so anyone can do it. The Regionals are programmed for the really good athletes, and the Games are programmed for the best. If you're not there, you'll be exposed. If you can't deadlift 400 pounds at the Games for multiple reps, like Josh [Bridges] couldn't [at the 2013 Games], you're exposed.

Same thing with Sam Briggs [not qualifying for the Games] last year. I was happy with that decision. After it happened, everyone was saying, "We need to let her in, give her a spot for the Games, she's a past champion," and it was like, no! We have a system; she missed the three-point shot with two seconds left. She had her opportunity to go and she blew it. In fact, the reality is, there are so many top athletes and there are going to be people who are really good who don't go to the Games at all, and that's the nature of the sport. That's the nature of a sport.

But here's what's cool about that

event [max-distance handstand walk]. If that had happened to Sam, Jason Khalipa, Rich, Lucas Barker, Dan Bailey, Josh, then [I would have known the] programming was a problem. It didn't. All those names crushed it, and Rich, I think, actually set the farthest distance on it. So it showed it wasn't a problem with the programming, it was a problem with the individual. What it showed me was all the top-level athletes can walk on their hands for a really long time. And what that led to was the event at the Games that I called the "Midline March" that had the unbroken handstand walk in it. I knew because of what happened at the Regionals that, even though a couple of people struggled with it, for the most part, it wasn't an issue for people to walk maybe 50 feet unbroken on their hands. So I constantly see what people are capable of and where the field is and where the top guys are at to guide my programming. I don't think of individuals while making it, but at the end, I'll be like, oh, this dude's going to be really good at that.

*Do you feel more pressure now that you're the "face" of the Games? It seems like any decisions that are made by any part of the team will come down on you.*

When I was a SEAL instructor, I was hard on guys because I had to be. One of the things I'd tell them is, "Hey, you know what? I'm not here to be your friend. I'm here to prepare you for combat. You're going to go out there and you're going to work side by side with some of my teammates, and if you're not prepared, you might get someone killed or you might get yourself killed. So I'm not looking to make friends."

I almost have that same attitude in a lot of the things I do in CrossFit. I'm not doing this to make friends or to make people happy. The decisions I make that are tough decisions and that are for the right reasons might not be the popular decisions. And that's tough to do sometimes. That's something I have to deal with all the time. And I don't have an issue making the non-popular decision. □

*For more exclusive excerpts from our conversation with Dave Castro, go to [theboxmag.com](http://theboxmag.com).*



“

THERE DEFINITELY  
IS NOT AN  
OFFSEASON IN THE  
PREPARATION AND  
CREATION OF THE  
GAMES. MY SEASON  
OF THE GAMES IS  
ALWAYS GOING.  
WE'RE ALWAYS  
PREPARING.

”





Athlete: Matthew Walrath  
Location: Paradiso CrossFit, Marina del Rey, California



# MASTERING THE NEXT “UNKNOWN”

**Blame the man on the cover of this very magazine. He spends most of the year racking his brain for strange and interesting ways to challenge the elite athletes at the CrossFit Games. As a result, the Games are rife with oddball challenges. But closer examination reveals that many of them can be valuable when properly integrated with your training.**

BY BOB LEFAVI, PH.D., CSCS, USAW, CFL-1 PHOTOGRAPHY BY CORY SORENSEN  
CROSSFIT GAMES PHOTOS COURTESY OF CROSSFIT, INC.

**T**he general aim of CrossFit is to enhance functional fitness by preparing for “not only the unknown but also the unknowable.” But truth be told, if you’re not regularly doing an impossibly wide variety of exercises, pretty soon everything you *are* doing will become, well, “known.”

Without question, it’s difficult to continuously challenge athletes with new “unknowns,” but CrossFit does a pretty good job. And if you’ve been following the progression of CrossFit, either as a fitness movement or as a sport, you’ve probably noticed that the

first place we tend to see the introduction of a radically new event is at the Games. From there, it tends to progress to the Open, then companies begin to market equipment needed for that event (if necessary), and finally the movement makes it to regional and local CrossFit competitions as well as your local box.

Some of the “unknowns” featured here may not have gotten that far yet, but here’s how (and why) to incorporate them into your training anyway.



The men storm the “Beach” at the 2011 Games.



## THE HILL RUN

**JULY 5, 2008**

The final event on the first day of competition at the second Games was a dusty run up and down a steep hill in the summer sun. Sounds pleasant, but it was, in fact, a leg-killing monster of an event, chewing up athletes and causing them to be carried away from the finish line. One of the issues: Even those athletes accustomed to long-distance runs might not have the muscle tissue to help them on climbs and might not train with significant intensity to manage a hill run. If you're starting out with good lower-extremity muscle power, you will fare better on this challenge, but there are still benefits to integrating hill runs into your training. The primary benefit is an increased lactate threshold, which enables you to work out harder for longer.

From a biomechanical point of view, proper technique in a hill run is to lean forward and take short steps going up and lean back with longer steps on the way down. Physiologically, this is pure muscle work in the ascent (propulsion forces increase by 74 percent on the incline), while we must be careful of the potential for injury associated with braking forces on the decline (impact forces are 54 percent greater during the descent).

The best way to train for a hill run is interval training on a surface that can change elevation, like a treadmill (or an actual hill, of course). But don't expect PRs; a rule of thumb is that for every percent incline in slope, you will slow down 12 to 15 seconds per mile. You will get some of that back in the descent, which will aid your speed by approximately eight seconds per mile.

## POUND A STAKE INTO THE GROUND

**JULY 11, 2009**

This new challenge, part of Event No. 4 on the first day of competition at the 2009 Games, was bookended by 500-meter rows. Using a sledgehammer, men hammered a 4-foot blunt-ended metal stake into specially prepared, evenly compacted ground; women used a 3-foot stake.

To mimic the move at your gym, get out the sledgehammer. One of the great benefits of wielding a sledgehammer is that it trains upper- and lower-body power at the same time. That also happens to be why sledgehammer swinging can be brutal; the swing is initiated in the lower extremity, but the athlete's upper-body musculature finishes the movement. And the vital link in all this is the core. Someone who is proficient at transferring power from the lower extremities to the upper body through the core is well-prepared for sledgehammer work.

It's important to realize that you don't need to use a heavy hammer to be effective in your training. Speed of movement affects total power more than weight in this exercise; a heavy hammer can slow you down too much. That said, maintaining proper mechanics when swinging a sledgehammer with speed is vital because acceleration/deceleration forces can predispose one to injury. So here are a few tips for good technique.

Always set up "square," with your feet evenly spaced from the stake (or tire, etc.). Grasp the bottom of the hammer's handle with your non-dominant hand while your other hand grips closer to the weighted end. Bend your knees and hips slightly, as if you were in the power position, prepping for an Olympic lift. Assuming your left hand is near the bottom of the handle and your right hand is closer to the weighted end, lift your left hand almost directly over your head, keeping your left elbow slightly bent.

Now, raise your right hand high over your right shoulder as if you were about to throw a football. Keeping your torso elongated and tight, and using some rotational force (twisting a bit), explode downward from your hips and powerfully contract your lats, shoulders and triceps. Your right hand should slide down the handle to a point just above your left hand. Move back into the setup position.

Don't switch back and forth between your right and left sides — that takes too much critical time. Instead, start with your dominant side. When you fatigue there, switch. Which side is your dominant side? The default answer to that question is "whichever one feels more natural." But the more scientific answer is this: When you split-jerk, one leg steps forward and the other one goes back, right? Swing on the side of the rear foot.

## SANDBAG MOVE

**JULY 17, 2010**

In the 2010 Games, athletes were tasked with climbing over a wall into the stands, where they had to move multiple sandbags (men's total 600 pounds; women's total 370 pounds) down the stairs, back over the wall, across the sta-



dium floor in a wheelbarrow, over the wall at the other end of the stadium and back up the stairs. Fastest times were 6:57 for the men and 9:03 for the women.

After this event aired, the use of sandbags in programmed WODs seemed to explode — and with good reason. They're a versatile training tool, and repeatedly picking them up, traveling with them and putting them down makes for one hell of a total-body strength workout. But there's one muscle group that must be prepared in particular when embarking on training with an unstable implement — the lower back (erector spinae). While forearms and quads need to be strong to make it through this kind of event, it's the lower back that encounters the resistance directly. Here's why.

The best way to move the sandbags up and down stairs is not to throw them but rather to walk with them on your shoulders. The consistency of the sand in the sandbag makes it difficult to pick up and place on your shoulders, and there's a good deal of lower-back movement involved in that lift. Furthermore, your lower back will absorb much of the downward compressive forces on the spine as you walk the stairs. So while you certainly want to make sure your quads, traps and forearms are strong, the real keys to optimal preparation may be the following three training suggestions.

First, work on maximizing back strength with Romanian deadlifts and GHD exercises. A good adjunct to this training is walking with a loaded bar (80 to 90 percent of max) in a back-squat position from one rack to another across the box.

Second, practice lifting a sandbag. It's not at all similar



to lifting a bar. You will need to bend lower and place your hands in different places on the bag to negotiate its movement as you lift it. Work on using both hands to flip it over one shoulder. See which shoulder feels better and how much weight you can handle if you place a sandbag on each shoulder.

Third, practice balancing a loaded wheelbarrow. This is the true variable in this competition. It's likely not even the weight of the wheelbarrow that will set you back but the fact that you're balancing that weight on one wheel. Matt Chan lost valuable time against Rich Froning in this event because he dumped his wheelbarrow. Wheelbarrow movement is 90 percent technique, and like all technique, it must be practiced in order for it to be efficient.

## 1,500-METER SOFT-SAND RUN

**JULY 29, 2011**

In 2011, the Games finally took competitors where the rest of the world dreams of going at the end of July: the beach. In the grueling event that opened competition, athletes had to do an open-water swim, an offensive number of chest-to-bars, hand-release push-ups and squats, and a pair of 1,500-meter runs through the sand.

Intuitively, you probably know it's more difficult to run on sand than it is on a hard surface, like pavement. But exactly how much more taxing is it? In the July 1998 edition of *The Journal of Experimental Biology*, a team of Belgian researchers found that running on sand takes 1.6 times more energy than running on a hard surface. This is because it requires more mechanical work (greater muscle force) to get through the sand, and there's a loss of efficiency of action by the active muscles and tendons as stored energy from eccentric contractions gets dispersed by the longer foot time in the sand.

But there are benefits, as well. Running on soft sand is a great way to increase the strength of the running musculature. That is, the greater contraction time and longer duration of eccentric activity can bring about greater strength adaptations in active muscles and tendons. This isn't going to be your fastest run, but it may encourage the growth that will enable your fastest runs. Think of a baseball player training with a donut on his bat. He's not swinging fast, but he is establishing a movement pattern in which he will explode when the donut comes off.

To maximize these benefits, therefore, training for a soft-sand run needs to be intelligent, well-programmed and deliberate. The first step is to start easy. Find a good pace and focus on minimizing "support" time, or the time your feet are on the surface. Try short intervals, such as cycles of 90 seconds of work and two minutes of rest.

Also, consider running barefoot. You'll feel lighter coming out of the sand, but because your feet are used to having support from your shoes, you might experience some discomfort in your feet, ankles, Achilles tendons and calves afterward.

In the end, this is "strength-endurance" training, and you may feel more like you just completed a box-jump WOD instead of a running WOD.



Chris Spealler

## 100-FOOT MONKEY-BAR TRAVERSE

**JULY 30, 2011**

After athletes front-squatted and cycled, the 2011 "Killer Cage" event had athletes test their grip strength by traversing monkey bars 50 feet in one direction and then immediately returning to the start. It's a fun throwback to your playground days, but for many athletes, the unique stress it put on the shoulder joint hadn't been felt for decades. Sure, you're used to pulling exercises, but not like this, when the resistance is experienced with the shoulder in a partially extended position. That is, you're not usually reaching forward on one side when you're pulling down on the other.

Training for monkey bars can improve range of motion in the shoulder joint and build strength for pull-ups and toes-to-bars. But it's not the shoulders, lats or core that will benefit the most from such training. Believe it or not, it's





grip strength that is the single biggest benefit of monkey-bar traversing. The muscles of the forearms and hands are maximally stressed, and they respond — in the short term by aching but in the long term by adapting with greater strength. That strength will transfer to many other movements, not the least of which are the snatch and clean.

To best prepare for this exercise, we suggest two things. First, practice toes-to-bars, but with an emphasis on pressing down on the bar with your palms as you ascend. That will also help by pushing your shoulders back behind the bar and clearing a better pathway for your knees to come up directly under the bar. Focus on pressing the bar down and forward. You can best feel this by wrapping your thumbs under the bar. (That is, don't use an open grip.) This will train the muscles used in shoulder extension/flexion, a key to monkey-bar traversing.

Second, hit the playground for practice (assuming you don't have crossbars in your box). As you practice, concentrate on twisting your torso and hips as much as possible so that the shoulder joint of your reaching arm gets as close to being under the next bar as possible.

## BALL TOSS

**JULY 13, 2012**

While sitting in the GHD, athletes at the 2012 Games executed a full-range-of-motion GHD sit-up, grabbed a medicine ball with both hands while fully extended, sat up and threw as many balls as far as possible in 20 seconds. Men threw 4-pound balls, and women threw 2-pound balls.

Doesn't sound too bad, does it? But remember, while the ball may be light, the extent of extension is extreme.

That is, athletes had to get very low behind the GHD in order to grab the balls from the ground behind them.

Couple that with the fact that the abs are particularly vulnerable to mechanical tearing in this position, and this exercise could cause injury, particularly when performed with high reps and speed. So, first off, be careful — and remember that you don't need to jump straight into mimicking this exercise exactly.

Second, undergo some preparatory training to make sure your abs and hip flexors are strong enough to hack this move. Hollow rockers, toes-to-bars, crunches and L-sits can be helpful to test and train core strength. And that's really the benefit of training for the ball toss; it relies on the muscles around the core to initiate power that is then transferred to the upper body and ultimately the ball. Training for this event can bring about power that you will realize in other events.





In the same way, the uniqueness of the throw allows for optimal power. Here's why: In a standard push or pull, you instinctively slow the weight down near the top of the movement. This is called compensatory deceleration. But that's not what happens in most sports movements. So by releasing the ball, you train and maximize power through the entire range of the movement.

Other tips: Make sure your lower back and hip flexors are fully warmed up well before hitting the GHD, and keep the medicine ball behind you as long as possible before launching it. The most successful athletes don't release the ball before their torso is at a 45-degree angle to the ground. If you release the ball too early — at 0 to 45 degrees — you will lose some rotational torso power generated by your hips.

## FLIP THE PIG 100 YARDS

**JULY 26, 2013**

No, the Games were not held in a barnyard in 2013. Instead, the "pig" was a specially designed piece of equipment described by HQ as "a large loadable, metal frame that can be flipped like a tractor tire."

Even though the pig was about 6 feet tall and weighed 490 pounds (for men) and 310 pounds (for women), you can practice this technique by flipping your average tractor tire. Tire flipping trains the whole body, with traps, quads, deltoids, lats and triceps strength being primary, but technique determines the extent of their use. If you make this a strength exercise, you're likely to fatigue quickly. And how do you avoid that? Good technique.

When you set up for a tire flip, step up close to it and get low, low enough that your biceps are nearly touching the tire and your shoulders above it. However, the goal is not to drive forward but rather to lift up and back. If the tire is pushing you back on your heels, you are in the right place. Stand up with the weight. Driving forward takes simply too much muscular energy.

Once the tire gets to 45 degrees, press into it with a thigh to give it just enough of a boost so you can quickly move your hands from a pulling position to a pushing position. One push by driving with extended arms, and over it goes.

The key here is to train technique in the upward pull by working on lifting up and back. Think of it as a deadlift, not a football sled. Technique cues are: Get close and low; line up with your shoulders over the top; pull using your legs to drive with flat feet; thigh bump; quick hands; extend and drive. Again, pull up and back; we know this isn't how it looks, but we promise that's the most efficient technique. Let your competitors wear themselves out by pushing.



Jason Khalipa





## SPRINT SLED 1 & 2

JULY 25, 2014

This piece of equipment is less of an unknown and more something athletes may already have access to: a sled. But let's face it, how many times do you see one of them featured in a WOD?

There are many benefits to sled training. The obvious metabolic benefit can't be understated. There is a huge metabolic cost to sled pushing simply because of the large number of muscles involved. We would challenge you to name one major muscle group that's not contracting (concentrically, eccentrically or isometrically) in a sled push. Muscles strengthen in overhead movements, and met-con times decrease when you frequently push a sled with all you have.

But there's something more. CrossFit asks athletes to perform in many different environments, and these environments may cause the athlete to encounter a unique resistance to work against: water in swimming, air in cycling, etc. In exercise science, this is the "friction" coefficient. Understanding how to negotiate friction (the sled against the ground), however, is not a science; it's an art. And it's only mastered by training. Learning how much to push (and when) is perhaps the most significant benefit of sled training.

In that light, here we have yet another event in which technique wins out. All the quad and deltoid strength in the world can't offset efficiency of movement with this apparatus. The Games athletes were aware of that, and you could see their measured but intense approach to this event.

There are two technique issues that must remain in your mind when pushing a sled. The first one is transmitting the most power to the sled without driving the front edge



of it into the ground. If you lift too much on the posts or stand up too high, you will tilt the sled forward and kill the momentum. Likewise, if you maneuver too low and try to keep the sled completely flat, you lose the anatomical position required for optimal leverage

and power production. Only with practice can you find the angle of the sled where the drag on the ground and the position of your body are optimal.

Exactly how you perform the exercise is vital, as well. Too often, athletes move up on the posts and place their shoulders against the sled. Yes, that may work for Chris Spealler, but it's not most efficient for the rest of us. Instead, push with your hands on the posts and extended arms, letting your bodyweight help your forward lean. Keep your torso tight and drive like crazy with your legs (cleats will help if you're on grass). Don't raise your head up; that will just slow you. Keep your head down and drive!

It helps to remember some fundamentals of physics. It takes more energy to change an object's momentum than it does to maintain its momentum. That is, when you start the sled moving from a dead stop, you have just expended a great deal of energy. Once the sled gets moving, you don't want to stop and start again. So find that sweet spot, drive out of the balls of your feet and keep your legs moving. □

*Bob LeFavi, Ph.D., CSCS, USAW, CFL-1, is a professor of sports medicine at Armstrong State University and co-owner of CrossFit GroundSpeed. He also competed in the 2013 CrossFit Games, Masters division.*

A woman in a grey tank top and black leggings is in mid-air, jumping over a wooden box. A man in an orange tank top and black shorts is also in mid-air, jumping over a wooden box. The background is a plain, light-colored wall.

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# FERMENT

PROBIOTICS ARE ONE OF THE MOST POPULAR HEALTH-BOOSTING SUPPLEMENTS YOU CAN BUY. BUT WHAT IF WE TOLD YOU THERE WAS A WAY TO GET THEM THAT DOESN'T INVOLVE TAKING PILLS?

BY ELKE S. NELSON, PH.D., CFL-1

**H**ere's a weird quirk of nature: The majority of the cells in your body aren't actually yours. It might be hard to accept, but your body is home to trillions of bacteria and other microorganisms, and these bugs outnumber human cells roughly 10 to 1. It's truly a staggering statistic, but once they stop goggling over it, the next question most people have is: Why? Thankfully, scientists have started to tease out some answers and in the process are spurring mainstream interest in gut health and probiotics.

Though microorganisms live all over the body, their prime hangout is the gut, aka the gastrointestinal tract. And just like how having the wrong people (or too few people) show up for a party can ruin the affair, having the wrong organisms (or too few of the right ones) shack up in your gut can cause trouble.

How much trouble? Recent studies suggest that the bacteria living inside you can alter your susceptibility to a number of pathological conditions, namely obesity, insulin resistance, inflammation and elevated cholesterol. One possible explanation, supported by the observation that the type of gut bacteria in obese people often differs from that in healthy people, is that gut bacteria influence metabolism. It might be hard to attribute so much control to the microscopic critters that live inside you, but people considered to have a less diverse population of gut bacteria tend to have greater insulin resistance, higher fasting triglyceride levels, higher LDL (bad) cholesterol, and higher markers of inflammation than those with a more diversely populated gut. And inflammation and fat mass were both reduced through changes in diet.

Eating the right types of foods is, of course, one of the most effective ways to expose yourself to natural probiotics. "Probiotic" generally refers to a food or bev-

erage that contains live bacteria (and/or less commonly, yeast). A more formal definition — "live microorganisms which, when administered in adequate amounts, confer a health benefit on the host" — was adopted after a joint Food and Agricultural Organization of the United Nations and World Health Organization expert consultation in 2001.

When most people think of foods that contain live bacteria, they think of yogurt. But unfortunately, thanks to the process of pasteurization, there are few (if any) microorganisms still alive in the sugar-laden gunk that constitutes many commercially available yogurt products. Instead, we recommend eating less-known natural sources of probiotics: fermented foods and beverages.

The process of fermenting food and drinks, both to create alcoholic beverages and to preserve foods, is one that has been managed by humans for thousands of years. (And of course, it also often happens naturally when food is left too long in the fridge or the pantry.) The process involves the conversion of carbohydrates into acids, gasses or alcohol by the action of bacteria and/or yeast. It's why beer gets you drunk, yogurt tastes

## APPLE GINGER SAUERKRAUT

*1 20-ounce glass jar*

*$\frac{3}{4}$  pound cabbage (red, green or mixture optional), shredded*

*1½ Gala apples, peeled, cored and shredded*

*1 teaspoon organic pressed ginger juice*

*1 teaspoon sea salt*

*$\frac{1}{4}$  teaspoon curry powder*

Mix apples and cabbage together and then add remaining ingredients. Pound the cabbage mixture to release its juices and pack it into the container little by little, leaving only a 1-inch space from the top. Make sure the vegetables are below the liquid (covered in a layer of their own juices). It takes a lot of muscle to get the vegetables to release their juices, so be patient and aggressive. If you can't seem to release enough juice to cover the veggie/spice mixture, make up the volume using brine. (See "The Basics of Brining" for details on making a brine.) Cover with a napkin and rubber band for one week at room temperature. After that time, apply a regular screw-tight lid, and store in the refrigerator. The kraut should last a few months.







## IN A PICKLE

Confused about the difference between a pickle and a ferment? Don't be. Pickling is a generic term for preserving food in an acidic environment. The confusion stems from the fact that there are two ways to create that environment: One is to expose your brine to lactic acid and let it ferment, and the other is to make the brine out of an acidic liquid, usually vinegar. Generally speaking, a "pickle" is a vegetable that has been preserved via the latter method, also known as quick pickling. Because these veggies haven't been exposed to lactic acid, they don't boast the probiotic benefits of a ferment. The recipes featured here are all ferments.

sour, and bread is fluffy and airy inside. And it can be done very easily at home because the bacteria that produce the desired effect are floating around unseen in the air. All you have to do is prepare the food, leave it open to the air for a short period, and then seal it entirely so that only the right kind of bacteria proliferate in the container.

Fermentation may sound scary and can definitely be intimidating, but the acidic environment that results from fermenting food (along with the salt involved in pickling) favors the growth of good lactic acid bacteria (LAB), which thrive in an acidic state, and kills the critters associated with food spoilage (which just can't handle it). Beneficial strains of *Lactobacillus*, *Bifidobacterium* and *Streptococcus* (not the same strain that causes strep throat) prosper in these preserved, fermented foods — pretty sophisticated for an old-school preservation technique used back before refrigerators existed.

Dairy products also can be a rich source of LAB, which are normal inhabitants of the human gut and, as their name implies, produce lactic acid as their major byproduct. Research supports dairy's benefits. Eight weeks of consuming 250 grams of probiotic yogurt (roughly 1.5 times the amount in a typical single-serving store-bought container) containing LAB

(specifically *Bifidobacterium* and *Lactobacillus*) daily reduced inflammatory markers like C-reactive protein (CRP) in patients considered to be in remission from inflammatory bowel disease. Another study, published in the journal *BiolImpacts* in 2014, again compared the effect of probiotic and conventional yogurt on inflammatory markers, this time in patients with Type 2 diabetes. Patients were given 300 grams per day for

## PICKLED GREEN BEANS

1 16-ounce Mason jar  
2-3 handfuls of fresh green beans, ends removed  
3 garlic cloves, sliced in halves or thirds  
1 tablespoon sea salt  
½ tablespoon dill  
½ teaspoon black pepper  
½ teaspoon mustard seed, whole  
½ teaspoon cloves, whole  
enough brine to cover veggies/  
spice mixture and fill the entire Mason jar

Put green beans, garlic and spices into the Mason jar, sprinkling with some additional sea salt while doing so. Pack the green beans into the jar as creatively as you can. Pour the brine mixture into the jar to cover beans, leaving about a ½-inch space at the top of the jar. Screw the lid on tight and let the jar sit in an undisturbed area of the kitchen for up to one week. If desired, taste occasionally over that time to check the flavor. When the beans taste as tangy as you desire, put them in the fridge, where they should last several months.





## PICKLED RED ONION

1 12- to 14-ounce glass jar  
 ¾ red onion, very thinly sliced  
 (preferably using a mandolin)  
 1 lemon, juiced  
 2 tablespoons raw honey  
 1 teaspoon sea salt

Mix all ingredients together and pound the onions until they're covered with their own juices. Place the lid on the container, but leave it loose for roughly seven hours at room temperature. After that time, tighten the lid and place in the refrigerator for one week.

eight weeks, and, perhaps not surprisingly, the consumption of probiotic yogurt caused a significant decrease in the measure of the average level of blood sugar over a few-month period and in a protein that promotes inflammation, in addition to a modest but insignificant decrease in CRP. A 2011 review of research published in *Critical Reviews in Microbiology* discusses the potential association of LAB with a long list of beneficial effects, ranging from mitigation of lactose intolerance to prevention of colon cancer.

As if the anti-inflammatory effects are not enough, a 2013 study in the *Medical Journal of the Islamic Republic of Iran* showed that LAB can even benefit performance. Young female endurance swimmers who consumed 400 milliliters of probiotic yogurt for eight weeks showed greater improvements in their 400-meter free-swimming records compared with those who consumed ordinary yogurt. In addition to improved swim times, women given probiotic yogurt experienced reduc-

tions in breathlessness, ear pain and respiratory infection episodes.

But LAB are not just found in dairy products. Kimchee, a Korean dish traditionally made with napa cabbage, is another good source — and that's not all the pungent condiment is good for. According to a 2014 review in the *Journal of Medicinal Food*, kimchee has beneficial anti-aging properties and also has been shown to reduce the risk of cancer and obesity and promote immune, brain, colorectal and skin health.

And speaking of skin, there is ample evidence that beneficial bacteria support the maintenance of the body's biggest organ system, with studies indicating that patients with acne and seborrheic dermatitis have imbalances in gut bacteria. Clearly, gut health is critically important to overall health.

## DIY FERMENTATION

All this research helps explain why the probiotic supplement industry is booming. But before you drop a pretty penny on the best bacteria pills, do your homework. Factors like shelf life, temperature exposure and handling can affect what's inside the container, no matter what the label indicates. In addition, unless you get tested to de-

## THE BASICS OF BRINING

Here are some guidelines to kick-start your at-home adventures in fermenting.



**1.** Before starting, sterilize your containers by submerging them in boiling water for 10 minutes.

**2.** There are two critical points to guaranteeing the success of the fermentation process: ensuring the veggies are completely covered in liquid and keeping them in a completely oxygen-free environment. Both these techniques help prevent spoilage.

**3.** If you can't coax enough liquid from the veggies themselves to fully cover them (or you're making a pickle — see "In a Pickle" for the difference between pickling and fermenting veggies), you can add a bit of brine, made from filtered water and sea salt. The desired concentration of salt in brines varies widely and is

a matter of taste preference and desired speed of bacterial activity. Where indicated for the recipes here, brine was made by adding 1¼ tablespoons of salt to 2 cups of water. With whatever concentration you choose, it's important to stir until the salt fully dissolves and cool the mixture to close to room temperature.

**4.** Explore using a fermentation starter kit. Although we didn't use one when developing the recipes here, a kit can offer better control over the type of bacteria that dominate your final product.

**5.** Fermentation time varies depending on temperature, type of food, salt concentration and whether a starter was used. Taste every few days

after starting the process, and put your container in the refrigerator to stop fermentation when it reaches your desired level of tanginess/acidity.

**6.** Periodically check in on your results. It's pretty tough to mess up a fermentation, but certain variables (like how much air the ingredients are exposed to) can cause the ferment to go bad. Fortunately, it's pretty easy to tell when that has happened. The food will look and smell rotten — brown or dull/colorless, mushy texture, extremely pungent smell — or there will be visible mold or the brine will be cloudy. If you see any of these signs or have even the slightest doubt that bad bacteria have dominated, throw it out and start over.



termine which bacteria your gut is lacking, it's hard to know which specific type of probiotics you need. You can avoid risking a relatively pricey investment in supplements and opt for the transparency of making probiotics in your own home. Eating probiotic foods trumps taking probiotic supplements for several reasons. For one, as bacteria feed on the food you're fermenting, they start to break it down, reducing the amount of work the body has to do when it's time to dig in and digest. This could explain why some people who can't tolerate the lactose in dairy actually do pretty well with fermented dairy like yogurt. And fermentation also may enhance the vitamin content and bioavailability of the nutrition in food.

Scattered on these pages you'll find three recipes for fermented veggies. If eating fermented foods is new to you, start small. Try a small spoonful every day for a few days or even a week, see how you tolerate it and adjust your intake accordingly. □

Don't confuse probiotics with prebiotics, which the *Journal of Nutrition* has defined as "a selectively fermented ingredient that allows specific changes, both in the composition and/or activity in the gastrointestinal microflora that confers benefits upon host well-being and health." In other words, prebiotics like inulin and potato starch can be viewed as food for probiotics; they support the growth and maintenance of a healthy gut by fueling the beneficial bacteria in your intestine.

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# DRINK *up!*

FACTS AND FIGURES ABOUT **HYDRATION**

BY SOMMER ROBERTSON-ABIAD





hen it comes to proper hydration, there's no shortage of misconceptions floating around. From drinking eight glasses of water per day to shunning performance-boosting caffeine and sports drinks, it's no surprise box-goers are confused about

how to best fuel their workouts while staying hydrated.

Water is involved in every type of cellular process in the body, and when you're running low, all these processes run less efficiently. "Water is your body's most important nutrient, making up roughly 60 to 70 percent of total bodyweight," says Stacy Sims, Ph.D., exercise physiologist, nutrition scientist and co-founder of Osmo Nutrition. "It helps maintain body temperature, metabolize body fat, promote digestion, lubricate and cushion organs, transport nutrients and is a key component of blood."

Although water may not top your list of important nutrients, it's required to maintain health — and muscle tissue and strength. Pools of studies have shown that even mild dehydration — as little as a 1 to 2 percent loss of bodyweight in water — can severely impair performance. Not replenishing fluid as fast as your body is pushing it out of its pores during a tough workout can quickly send strength spiraling down the drain. A study published in 2010 in the *European Journal of Applied Physiology* found that when subjects were mildly dehydrated (having lost 3 percent of their bodyweight in water) and engaged in a full bodyweight lifting protocol, they reached failure sooner, felt like the work was harder and had higher heart rates. Similar results were found in an earlier study published in the journal *Medicine & Science in Sports & Exercise* on subjects performing a multi-set squat protocol.

Beyond performance, running low on fluid can cause mood, energy levels and cognitive function to drop. Severe dehydration can lead to fainting, severe muscle cramps, convulsions and even death. To help you avoid getting swept away by the ocean of misinformation, we separate the myths from the facts about hydration.

You need to drink eight glasses of water per day.

**FACT** If you're still following the "8-by-8" rule (drinking eight 8-ounce glasses of water a day), you might not be allowing your body to work at its peak. You need a healthy dose of water daily, but how much varies by the individual and depends on many factors, including bodyweight, fitness level and gender, to name a few. While there is no hard and fast rule for how much you should drink, Sims says the more you sweat, the more fluid you'll need over the course of the day, especially if you're working out in hot and humid environments. To keep your body topped up, you should aim to drink about half your bodyweight in ounces per day. (For example, if you weigh 200 pounds, drink 100 ounces.) Sims also recommends you add a sixteenth of a tablespoon of salt per 20 ounces of water to maximize water absorption.

Clear urine is the best sign that you're hydrated.

**FACT** Urine can give you a general indication about your level of hydration. The kidneys regulate water balance in the body, getting rid of more water when there's more around and less when it's in shorter supply. The less water your kidneys need to get rid of, the less water you have in your urine and the more concentrated — and dark — it becomes.

Ideally, urine should be either pale yellow or clear. "The clearer your urine is first thing in the morning, the better," Sims says. She cautions that the color of your postworkout pee is not a good indicator of hydration because it takes several hours for fluid balance to occur. If it becomes important to more accurately determine dehydration status, you can do a urine-specific gravity test, which measures and compares the density of urine to the density of water.

Caffeine dehydrates you.

**FACT** Contrary to popular belief, research has shown that caffeine, when consumed in moderation, does not provoke water and electrolyte imbalances. "Caffeine is not a diuretic and does not dehydrate you during exercise," Sims says. "It has no adverse effect on [exercise] performance but rather acts as an ergogenic aid and can improve your workouts."

On the other hand, you'll want to steer clear of beverages that contain alcohol. Not only will that thirst-quenching swig of beer dehydrate you, a study published in the journal *PLOS One* in 2014 suggests it also can hamper muscle recovery after exercise.

31

PERCENT  
of bone mass  
that's water





Thirst is the best indicator of hydration.

**FACT** Thirst is an important regulatory mechanism controlled by the hypothalamus, the part of the brain that's responsible for maintaining body-fluid balance. A thirst signal can arise when there's a volume deficit either inside or outside cells, but there's a lag time. Once you feel thirsty, your body has already reached a point of moderate dehydration, and it becomes more difficult to replenish lost fluids.

Every pound of water lost through sweat translates to about 16 ounces of water, which is why Sims recommends you hit your WOD well-hydrated. "When you start to exercise, blood is shuttled to the working muscles and to the skin to offload the heat being produced by the working muscles," she explains. "As you lose body water through sweating, respiration and insensible urine losses, blood volume drops. And when this happens, there's less and less blood available for your muscles, usually leading to fatigue." To ward off dehydration and fatigue, Sims recommends you drink at least a 1 to 4 percent carbohydrate solution with sodium and potassium (a recovery sports drink) to help slow down the rate of fluid loss and allow you to get more out of your training session.



75

**PERCENT**  
of muscle tissue  
that is made up  
of water

Plain water is best for keeping hydrated throughout the day — and postworkout.

**FACT** If you're working out hard, plain water won't cut it. "Slamming back lots of water throughout the day causes a false sense of rehydration — you'll pee clear but won't be hydrated," Sims explains. This is because sodium is needed to help pull water across the intestines, where it's absorbed. When you consume liberal amounts of water without sodium, regulatory hormones kick in and stimulate the kidneys to preserve stored sodium and kick water out, leaving you dehydrated.

In addition to adding salt to your water throughout the day, Sims suggests topping up your water and mineral tanks by eating more vegetables and fruits, as well as sipping on beverages such as coffee, tea, protein shakes and even soups — all of which contribute to overall fluid intake.

A hard training session wreaks havoc on your muscles, and what they need to heal (and grow) is protein. Sims says a protein shake to stimulate tissue repair, as well as to rehydrate, is best, especially if your workouts are less than 90 minutes. If your workouts last longer than 90 minutes, you'll also want to down a 1 to 4 percent carbohydrate solution with sodium and potassium (a recovery sports drink), followed by water with salt over the course of four to five hours to optimize fluid balance across all compartments of the body.



7.8

**PERCENT**  
of strength lost by dehydrated (2.1 percent bodyweight loss from water deficit) resistance-trained men performing a knee-extension exercise, according to a study published in the journal *Applied Physiology, Nutrition, and Metabolism*



# ELECTROLYTE EDGE

If you've ever grabbed a sports drink, you've no doubt seen something on the labeling about its electrolyte content. But what are electrolytes, and why do you need them?

Electrolytes are ionized chemicals (often referred to as salts) in the blood that carry electrical charges. The most common are sodium, potassium, phosphorus, magnesium, chloride and calcium. They serve many roles in your body, including maintaining muscle and nerve function, regulating blood pH and blood pressure and, of course, keeping you hydrated by driving water into cells.

The kidneys tightly regulate electrolyte balance, increasing or decreasing the electrolytes they extract from the blood. Heavy sweating, resulting from intense exercise or hot climates, can deplete the body's electrolyte stores, as can high demands placed on muscle. These demands can exceed the ability of the kidneys to replace lost electrolytes. Heavy sweating can tip the electrolyte balance to the other extreme and allow high levels to accumulate in the blood. A shift up or a shift down can spell a tidal wave of trouble for the body.

Here are the electrolytes your body needs and the foods in which you can find them.



## SODIUM

**WHY YOU NEED IT:** Sodium helps regulate the amount of water in and around cells. It also aids in maintaining acid-base balance and promotes nerve impulse transmission and muscle contraction.

**DEFICIENCY:** Guzzling too much water over too short a timespan and intense sweat sessions can cause sodium levels to dive, which can lead to a condition known as hyponatremia. Early signs that water and sodium balance have been thrown out of whack include feeling bloated, followed by nausea and vomiting. In severe cases, the condition can be fatal.

**BEST SOURCES:** Sodium is found primarily in salt, such as standard table salt and sea salt, as well as soy sauce. It's also contained in most foods in moderate amounts, particularly in meats, dairy, breads and vegetables.

## POTASSIUM

**WHY YOU NEED IT:** Potassium is essential for proper cell, nerve, brain and muscle function. It regulates the actions of kidneys as they filter blood and, together with sodium, stimulates the movement of water in and out of cells.

**DEFICIENCY:** Low potassium, or hypokalemia, can cause fatigue, decreased muscle strength, muscle cramps, gastrointestinal disturbances such as bloating and constipation, high blood pressure, kidney stones and irregular heart rhythms.

**BEST SOURCES:** You can find potassium in root vegetables like sweet potatoes, as well as bananas, apricots, dairy and legumes.

## PHOSPHATE

**WHY YOU NEED IT:** Next to calcium, phosphorus is the most abundant mineral in the body. It's critical for the synthesis of proteins that promote growth, maintenance and repair of all tissues and cells, and functions to maintain electrical neutrality and buffer pH inside cells. It's also needed to help balance and make use of other minerals, including magnesium.

**DEFICIENCY:** Low magnesium levels can hinder the absorption of phosphate, as can excess calcium, which binds to and sinks phosphate levels, causing muscle weakness and bone pain.

**BEST SOURCES:** Protein-rich foods like meat, fish, poultry, eggs and dairy are good sources of phosphate.

## MAGNESIUM

**WHY YOU NEED IT:** This mighty mineral plays a role in more than 300 biochemical reactions in the body, contributing to energy metabolism and the synthesis of proteins involved in bone strength and blood clotting, regulating the hormone cortisol, and assisting with the normal function of muscles and nerves and the immune system.

**DEFICIENCY:** Although deficiency is rare, running low on this mineral can lead to a raft of symptoms, including loss of appetite, fatigue, weakness, insomnia, anxiety and high blood pressure.

**BEST SOURCES:** You can find magnesium in dark leafy greens, legumes like black-eyed peas, nuts (almonds, cashews and peanuts), fish such as halibut and mackerel, and plain yogurt.

## CHLORIDE

**WHY YOU NEED IT:** Chloride courses through the body with sodium and water to help distribute body fluids. It's also an important component of stomach hydrochloric acid, the gastric juice that helps break down food.

**DEFICIENCY:** While it's rare

to run low on this mineral, excessive sweating during strenuous workouts can tap chloride stores.

**BEST SOURCES:** Chloride is found primarily in salt, such as standard table salt and sea salt. It's also contained in most foods in moderate amounts, particularly in meats, dairy and eggs.

## CALCIUM

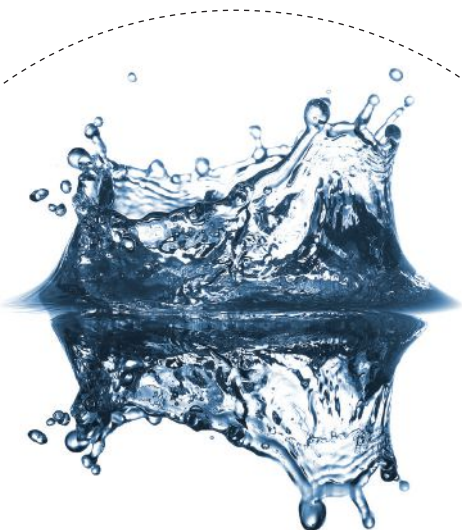
**WHY YOU NEED IT:** Calcium is the most abundant mineral in the body. It's essential for the mineralization of bones and teeth and is also involved in cell signaling and hormone secretion, proper nervous system function, muscle contraction and relaxation, blood clotting and blood pressure.

**DEFICIENCY:** When intake is low, the body can yank calcium from bone tissue to ensure normal cell function. Over time, this can lead to low bone mass (osteopenia) and porous, fragile bones (osteoporosis).

**BEST SOURCES:** Calcium-fortified orange juice, dark leafy vegetables like spinach, and dairy and oily fish like salmon provide calcium.

You can never drink  
too much water.

**FACT** Contrary to the old adage, sometimes you can have too much of a good thing, and such is the case with water. "Overconsumption of water contributes to total-body dehydration and excessive dilution of sodium," Sims warns. "This is especially common in women, as [the hormone] progesterone already increases sodium losses." Treading too long in low-sodium territory can lead to hyponatremia, a serious clinical condition whereby water is swept up from the blood and anchored down inside your cells, causing them to swell. Early symptoms of this condition include headaches, nausea, vomiting, confusion, disorientation and fatigue, and it can quickly upsurge to seizures, coma and even death. □



**2,000,000**

**THE AVERAGE NUMBER**

of sweat glands in  
the human body

## H<sub>2</sub>O'd

How do you know that you're treading into dehydration territory? Watch for these warning signs that your body is running too low on water.

### SYMPTOMS OF EARLY OR MILD DEHYDRATION

- Mild thirst
- Reduced urine output; urine is darker yellow
- Dizziness made worse when standing
- Weakness
- Cramping in the arms and legs
- Sleepy or irritable
- Headaches
- Dry mouth or tongue with thick saliva

### SYMPTOMS OF MODERATE TO SEVERE DEHYDRATION

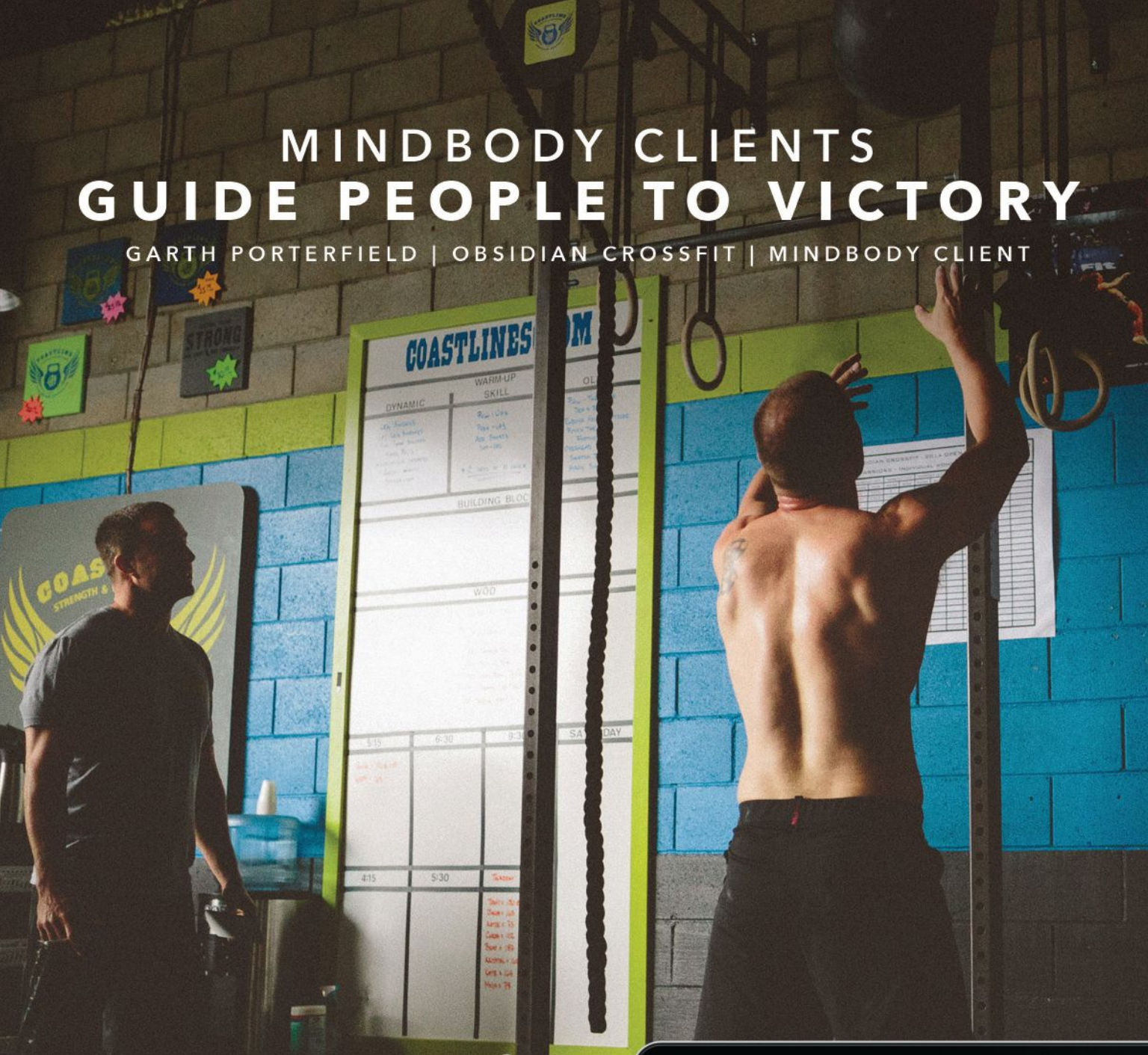
- Extreme thirst
- Inability to pass urine, or reduced amounts; color is dark yellow
- Low blood pressure
- Fainting
- Severe muscle cramps in the arms, legs, stomach and back
- Convulsions
- Bloating stomach
- Sunken, dry eyes, with few or no tears
- Lack of elasticity of the skin
- Rapid and deep breathing
- Fast, weak pulse





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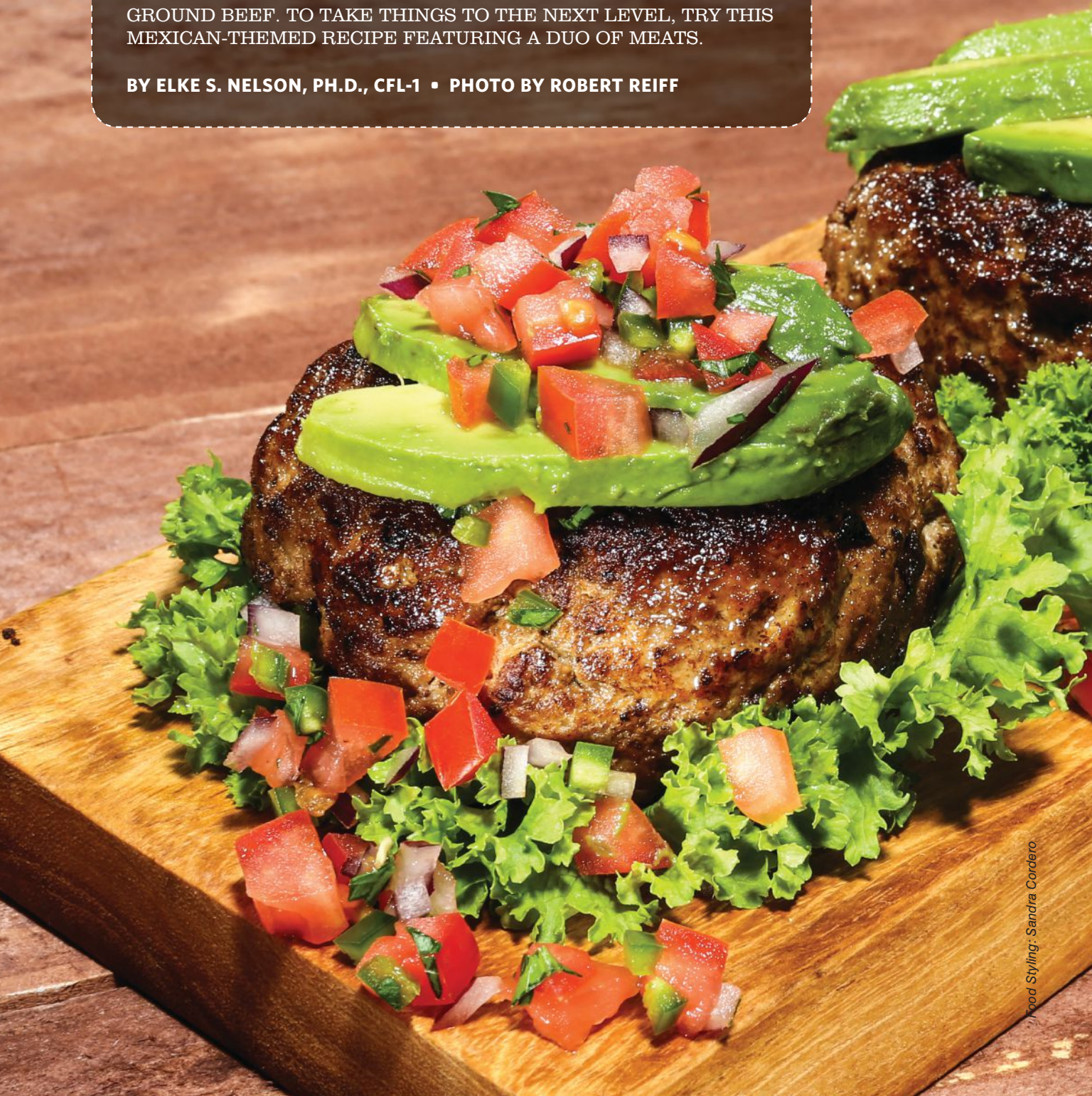




# MEXICAN SUPER BURGERS

THERE IS MUCH MORE TO A BURGER THAN JUST PATTIES OF GROUND BEEF. TO TAKE THINGS TO THE NEXT LEVEL, TRY THIS MEXICAN-THEMED RECIPE FEATURING A DUO OF MEATS.

BY ELKE S. NELSON, PH.D., CFL-1 • PHOTO BY ROBERT REIFF







## INGREDIENTS

1 pound pastured ground pork  
1 pound grass-fed ground beef  
1 teaspoon Himalayan pink sea salt  
1 teaspoon cumin  
½ teaspoon chili powder  
½ teaspoon garlic powder  
½ teaspoon onion powder  
¼ teaspoon cayenne  
1 tablespoon coconut flour  
½ large (or 1 small) yellow onion, chopped  
½ avocado, chopped  
1 large organic egg  
1 tablespoon coconut oil (can substitute ghee or grass-fed butter)

## DIRECTIONS

Combine all ingredients except for coconut oil in a large bowl. Using clean hands, mix ingredients thoroughly to ensure even distribution. Add coconut oil to a large skillet and place over medium heat. Mold a handful of the meat mixture into a patty and transfer to the heated pan. Repeat the molding and transferring until all the meat is on the skillet. Cook patties over medium heat for about 10 minutes, flip, then cover to allow the meat to cook throughout. After another 10 minutes, uncover and cut open one of the patties to confirm it is cooked completely. While pink is favorable for beef, the same is not true for pork. Serves 7.

## SERVING SUGGESTION

Serve burgers with fresh guacamole or avocado and/or salsa and hot sauce alongside a generous portion of your favorite veggie.

## NUTRITION FACTS

389 calories, 27 grams protein,  
3 grams carbs, 1 gram fiber,  
31 grams fat





## COMMUNITY SPIRIT **CROSSFIT FACES**

Personal expressions of CrossFit from around the globe.

BY BRITTANY GHIROLI, CFL-1

# ROCKY PIWKO

Lauren Morton of CrossFit Douglasville in Georgia was near tears. Since starting CrossFit in 2014, Morton — who has multiple sclerosis — has progressed from barely walking 100 meters to running 400 in workouts, but that doesn't mean she doesn't still have bad days.

Rocky Piwko, however, was having none of it. Piwko, the box's owner, saw Morton sobbing from across the gym. "I said, 'Listen, what is crying going to do?'" recounts Piwko, who was born without a right hand. "We were built different, we have challenges ahead of us, but the challenges are going to make us stronger people. I'm not going to feel sorry for you; I'm going to help you.' And right after that, she put her chin up and got through the workout." Morton cried again afterward, but that time they were tears of joy.

The 44-year-old Piwko, who has been coaching for five years, has always invoked a tough-love style. Before being introduced to CrossFit by friend James Needham in 2010, he battled alcohol and painkiller addictions and ballooned up to nearly 300 pounds. "I don't feel sorry for the person, I feel what they're going through," Piwko says. "I've been there, I was that person at one time."

Piwko found a new addiction in CrossFit, which he started incorporating at a "globo gym" nearby. It started innocently enough — he'd see someone doing a movement improperly and try to help them. Gradually, people just started showing up at the gym and asking Piwko what to do. That morphed

into him getting his Level-1 certification and teaching classes out of the gym's tiny kickboxing room. When the classes outgrew the space, Piwko decided he was going to open up his own CrossFit box and found a partner to help him. That partner became his wife, Kristi Piwko.

"What really drew me to doing this was paying it forward," Piwko says of owning and operating his own box. "I feel like CrossFit saved my life, and this the story I give to people: Look at what it did for me."

Piwko coaches about 95 percent of CrossFit Douglasville's classes and has never had any difficulty illustrating the movements. Depending on the WOD, he'll use a strap, hook or a clamp to assist his right arm's grip. "I'm constantly getting people now who have to adapt, not necessarily because they have a handicap but because they just had back surgery or broke their foot," Piwko says. "So it's always in my mindset to scale something. It's always been there."

It's also not unheard of — if the class is pretty advanced — for Piwko to briefly jump in. "I like to show them that it sucks for me, too, that I have to fight through workouts as much as they do," Piwko says of his athletes. "I want them to see that firsthand — I wouldn't put them through something I wouldn't do."



Rocky Piwko



# ADRIAN PATRICK AND ANDREW PUGH



Anyone who has ever traveled for work or to an out-of-town event knows that travel is decidedly not conducive to maintaining a fitness regimen. So what happens when you live on the road and work at night, touring the country as part of a rock band? Well, for one, CrossFit methodology's urging to "get out of the gym" takes on a whole new meaning.

Just ask the lead singer and guitarist of the band Otherwise, Adrian Patrick and Andrew Pugh, respectively, who have squeezed in WODs beside a river, in alleys and even at their own concert venues, where they've lugged in an Olympic lifting bar — gifted to Pugh in January — along with weights and a kettlebell that travel on the bus. There were times when it was so cold that they had to bring equipment backstage to thaw out and others when the venue was too small or smoky and the pair had to get creative. They've made a box in a rest stop, on top of mountains and in towns in the middle of nowhere. Twice they've worked out in the parking lot in front of the Giants' AT&T Park in San Francisco.

"We played this huge show in Texas at a festival with all these bands, and Andy was outside working out and I was doing sprints," says Patrick, who started training at SinCity CrossFit just outside Las Vegas in 2011. "One of the guys in another band came up and asked, 'What are you doing?' I was like, 'I'm working out.' He said, 'Save that for home.' Andy said, 'This is my home.'"

A rock band that does CrossFit might clash with the genre's stereotype of hard living, but Otherwise, which promotes what its members call "the wise life," is hoping to change that and convince other people of the value of functional fitness. "We have posted stuff on social media — if anyone wants to meet us at the [local] gym,

we encourage that. We always talk about that before and after the shows," says Pugh, who attended a bring-a-friend class at CrossFit 702 in Las Vegas two years ago and never looked back. "We want to encourage healthy aspects of life."

They already have. One of their fans was talking with the guys after one of their shows and was inspired by all the CrossFit talk. He ended up losing 100 pounds. "We're trying to open people's eyes to it," Patrick says of CrossFit, which he admits can be intimidating to some of their fans. "We're thinking of having contests [on tour] where fans can do a WOD with the band maybe in the back of the venue and hopefully help change their lifestyle."

Patrick and Pugh credit CrossFit for changing theirs. Pugh, who hit two PRs on their last tour, lost weight and met his girlfriend at the box. Patrick, who started right around his 31st birthday, says SinCity's co-owner Shain Howard totally changed his mindset toward fitness. "It's difficult to maintain a high level of workout on the road, but we train our best," says Patrick, who played football in college. "You don't have to be in a gym for two-and-a-half hours, and that's what really attracts me to CrossFit. We want to use our platform to show people that." ▣

*Brittany Ghioli, CFL-1, is the Orioles beat reporter for MLB.com. She calls 12 Labours CrossFit in Baltimore home. Follow her travels on Instagram: @brittghioli.*





# GIVING ASS-TO-GRASS A WHOLE NEW MEANING



At the 2015 Northeast Masters Throwdown, I fell on my ass. And it wasn't just any old ass-fall — it was in the heat of competition in front of hundreds of people, many of whom I knew and who were pulling for me. In the last part of the fourth and final WOD — a murderous seven-minute AMRAP of 33 wall balls (14 pounds) followed by 33 kettlebell swings (45 pounds) followed by 33 thrusters (65 pounds) — my legs and grip simultaneously said, “Uh-uh.” My fingers released the bar, my quads liquefied and my ass hit the mat with a teeth-clattering whump.

As a younger woman, this would have been devastating. Winning was everything, whether I was a runner or a beach volleyball player or a fitness competitor. If I didn't win or come close to it, life was over, and if I had completely failed in front of a huge group of people like this, I would have been furious, embarrassed and ashamed, and I probably would have burst into tears.

Instead, I laughed.

Well, sort of. I could hardly breathe at that point, so it probably came across as a choking grimace, but I swear on my son's life it was a laugh. The encouragement of the crowd enabled me to stand back up and continue, chipping away at the thrusters three at a time. Then two. Then one. Then ... time.

The owner of my box approached me with hesitation

afterward and offered careful congratulations. I said, “I fell on my ass!” and laughed. He looked perplexed at my glee but praised me for my effort and left me grinning like a dolt.

The next day, I took some time to think about my uncharacteristic reaction to what would once have been a flattening humiliation. Had I come full circle with my emotional attachment to winning? Or was it just that I had entered the Throwdown with no expectations? Certainly that was part of it; I had no illusions that I could win a competition like this. I have been doing CrossFit for less than a year and, with no powerlifting background to speak of, was pretty impressed with myself for power-cleaning 125 earlier in the day. That being said, the woman who won my age group cleaned 155 with ease. Yup — I'm probably not gonna beat her. Ever.

And you know what? That's OK. What I ultimately learned is that even as a 40-something single mom with a full-time job, I am still able to be competitive, even if I don't win. This competition — and yes, even the ass-fall — gave me back my identity as Athlete, which I had somehow misplaced sometime around 2013 and which I reclaimed with vigor. And while I will probably never win a power-based WOD geared toward women who can tip over a Land Rover on a dare, I can certainly work my way up to a Smart car — and be just fine with that. □



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## WHEN HEALTH BECOMES UNHEALTHY



Droves of people seeking better bodies and improved performance have signed up to try CrossFit, and as it has grown, so has its reputation for transformation. But sometimes working toward the goal of impeccable health can become less of a lifestyle and more of an obsession. When that happens, exercise and/or healthy eating can become an addiction.

Typically, addiction is defined by the presence of four C's: craving, loss of control, compulsion and continuation of behavior despite consequences. These standards can be applied to just about anything, including exercise and healthy eating.

"As with substance abuse, people begin exercising or eating healthy with control and intent," explains addiction expert Marv Fangman, MA, licensed master social worker and international advanced alcohol and drug counselor. "But somewhere along the way, the exercise and/or diet begins to control them. That's when it becomes an addictive process — and problematic."

Orthorexia nervosa, a term coined by Steven Bratman, M.D., is defined as a fixation on righteous eating and seems to stem from a strong emotional connection between food quality and consumption and an individual's self-esteem. People suffering from orthorexia nervosa may place extreme restrictions on their diets and punish themselves for cheating, often by engaging in extreme exercise. So while there's nothing wrong with eating Paleo or giving Whole30 a try, moderation and emotional boundaries with food are key to keeping health and performance a priority.

Exercise addiction is another psychological challenge some CrossFitters can face. Motives for exercising to the point of psychosocial impairment may include dissatisfaction with body image, dread of not exercising or an overwhelming craving for an exercise-induced "high." Whether exercise addiction can be a primary disorder is still subject to discussion, but psychologists link it to a number of other body-focused and obsessive disorders. Body dysmorphic disorder presents itself as a serious and consuming concern with perceived body flaws, which can lead to obsessive exercise in an attempt to fix them. And even without a focus on aesthetics, an athlete can find herself in an obsessive-compulsive mindset, working out to relieve anxiety about weight or other consequences. Warning signs of exercise addiction include the following: a rigid exercise routine; working out through illness or injury; pushing to the point of significant pain or beyond; and neglecting work, family or other social situations for exercise.

It's important to recognize that not everybody who follows a strict diet or trains rigorously suffers from addiction. Elite professional athletes or even those prepping for competition may spend hours in the gym and lock down a healthier diet for a period of time. The ability to maintain control of that physical activity and diet, rather than be controlled by them, is a hallmark of normal boundaries. □

*Abi Reiland, CFL-1, is co-owner of and trainer at CrossFit 8035 and the director of the MAT Games and the CF Circus. Find more at her blog [prettyngritty.com](http://prettyngritty.com).*



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# WOM

## THE GRIPPER

Fry your lungs, forearms and core in this fast-and-furious AMRAP.

By Eric Velazquez, CSCS

## THE WORKOUT

AMRAP in 10 minutes:

5 Handstand Push-Ups

10 Toes-to-Bars

15 American Kettlebell Swings

(Men: 53 pounds, Women: 35 pounds)

### DEGREE OF DIFFICULTY

Technical: 8.0  
Metabolic: 9.0  
Volume: 5.5  
Strength: 4.0  
OVERALL: 6.6 (out of 10)

### CLASSIFIER

Firebreather: 10 rounds or more  
Excellent: 8 to 9 rounds  
Good: 6 to 7 rounds  
Fair: 5 rounds or less

*To Scale: "If handstand push-ups are your goat, substitute three wall walks instead," Baroni advises. "For toes-to-bars, consider scaling to knees-to-chest, which closely replicates the demand, instead. You can also do Russian swings — bell to eye level — instead of full American swings, if needed."*

The spirit is willing but the forearms are weak.

Have you ever hit that part of a WOD when you've done so much grasping, pulling and carrying that your forearms seem unwilling (or unable) to soldier on? When they burn and quiver uncooperatively despite the work ahead? Well, this is one of those workouts. And you'll do it on purpose. "This workout, which we call the Gripper, will test your grip strength, your core stability and your mental toughness," says the author of this custom WOD and coach at Conviction Training Facility in South Carolina, Christy Baroni. And to balance out the burn, your hip and core musculature will also pay a heavy toll. So there's that.

### COACH SAYS

**1. ACTIVATE:** "Be sure you have mobilized your lats and shoulders properly before jumping into this one," Baroni says.

**2 MENTALIZE:** "Getting in to a positive place mentally will also help you keep moving throughout this 10-minute test," Baroni says. "At Conviction Training Facility, we use mantras like 'Breathe and move' or 'I can' to keep us focused positively throughout a workout."

**3 POP IT:** "When swinging a kettlebell, the pop of your hips should be what's

moving the weight," she says. "If this is a challenge for you, sticking with Russian swings will give you the chance to practice that movement." □

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